

WHAT IS CLAIMED IS:

1. A process for generating power comprising:
 - a first step of generating power from a fuel cell comprising a fuel electrode, an air electrode and an electrolyte membrane sandwiched therebetween wherein the fuel electrode is made of an alloy comprising platinum and a fuel is a liquid comprising a secondary alcohol, by directly feeding the fuel to the fuel electrode;
 - a second step of contacting the air electrode in the fuel cell with an oxidizable material and applying a current from an external electric source between the fuel electrode as negative and the air electrode as positive, after the first step; and
 - a third step of generating power from the fuel cell after the second step.
2. The process as claimed in Claim 1, wherein the fuel electrode is made of an alloy of platinum and at least one metal selected from the group consisting of ruthenium, tin, tungsten, copper, gold, manganese and vanadium.
3. The process as claimed in Claim 1, wherein the fuel electrode is made of an alloy of platinum and at least one metal selected from the group consisting of ruthenium, tin and tungsten.
4. The process as claimed in Claim 1, wherein the fuel electrode is made of an alloy comprising platinum and ruthenium.
5. The process as claimed in Claim 1, wherein an atomic composition ratio of platinum to the other elements in the alloy is 90/10 to 10/90.
6. The process as claimed in Claim 1, wherein the oxidizable material is water or hydrogen.
7. The process as claimed in Claim 1, further comprising a step of repeating the second step and the third step.
8. A process for regenerating a fuel for a fuel cell from a spent fuel produced in the fuel cell, comprising:
 - a first step of generating power from a fuel cell comprising a fuel electrode, an air electrode and an electrolyte membrane sandwiched therebetween wherein the fuel electrode is made of an alloy comprising platinum and a fuel is a liquid comprising a secondary alcohol; and

a second step of feeding a reaction product of the secondary alcohol produced after using the fuel in the first step to a reduction electrode and an oxidizable material to an oxidization electrode outside the fuel cell and conducting electrolytic reduction using an external electric source to regenerate the secondary alcohol from the reaction product.

9. The process as claimed in Claim 8, wherein the fuel electrode is made of an alloy of platinum and at least one metal selected from the group consisting of ruthenium, tin, tungsten, copper, gold, manganese and vanadium.

10. The process as claimed in Claim 8, wherein the reduction electrode is made of an alloy of platinum and at least one metal selected from the group consisting of ruthenium, tin and tungsten.

11. The process as claimed in Claim 10, wherein an atomic composition ratio of platinum to the other elements in the alloy of the reduction electrode is 90/10 to 10/90.

12. The process as claimed in Claim 8, wherein the reduction electrode is made of an alloy comprising platinum and ruthenium.

13. The process as claimed in Claim 8, wherein the oxidizable material is water or hydrogen.

14. A fuel cell comprising a fuel electrode, an air electrode and an electrolyte membrane sandwiched therebetween wherein

the fuel electrode is made of an alloy comprising platinum and ruthenium; a fuel is a liquid comprising a secondary alcohol; and the fuel is directly fed to the fuel electrode.

15. The fuel cell as claimed in Claim 14 wherein the fuel electrode is made of an alloy of platinum, ruthenium and tungsten or an alloy of platinum and ruthenium.

16. A system for generating power comprising:

the fuel cell as claimed in Claim 14;

an external electric source capable of applying a current between the fuel electrode as negative and the air electrode as positive; and

a feeding means for feeding an oxidizable material to the air electrode.

17. A system for generating power comprising:

the fuel cell as claimed in Claim 14 and
an external electrolyzing means for regenerating a fuel for the fuel cell,
comprising:

an electric source;

a reduction electrode for contacting a reaction product of the secondary alcohol produced after using the fuel in the fuel cell to regenerate the secondary alcohol from the reaction product; and

an oxidization electrode for contacting an oxidizable material.